STARLITE

The Award Winning Newsletter for Members and Friends of

G6OI
1938

Stourbridge and District Amateur Radio Society

G6SRS
1938

incorporating

Old Swinford Hospital School Radio Club

G4CVK

1969

ISSUE 08/2014

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MEETINGS

Visitors always welcome
The Society holds its full meetings on the
1st and 3rd Monday of each month at

STARLITE

Old Swinford Hospital School
Heath Lane
Stourbridge
(8.00pm – 10.00pm)

Additionally the shack is open during the same times on the intermediate Mondays

Telephone Enquiries to :-
Hon Secretary
John Clarke M1EJG
(01562) 700513

Or by e-mail to :-

honsec@g6oi.org.uk

All correspondence/enquiries should be addressed to the Hon. Secretary :-
STARS
c/o The Mill House
21 Mill Lane
Blakedown
Kidderminster
DY10 3ND

STARS Web Site URL :-

www.g6oi.org.uk

MESSAGE FROM THE PRESIDENT

A summary from the last Committee Meeting

Following discussions with the Facilities Manager we have agreement that we can carry on meeting at the school - unfortunately we shall lose the shack.
A working party has been set up (John (Hon Tres), Wayne, Nick and Keith) to adapt the existing cupboard at the bottom of the stairs for extra storage and to use as the shack. A new shelf to be installed for set up of rigs, trailing aerial cables will be left to connect up to existing roof mounted aerials. Security of cupboard to be increased A number of surplus items from the shack have been sold, still a quality for sale. Shack to be vacated by Aug 31st.

A formal process for CRB to be agreed with the school (John (Hon Sec) and James to work on this) process for new members and visitors to be agreed. John (Hon Tres) to review existing society rules and propose any amendments required to cover this. Also any other rule changes that need to be updated

Foundation Course starts 22nd September, Peter has created a poster to attract some participants from the school (Please see next page – Ed.). Proposed timetable already distributed.

GB3OS - following a number of issues / concerns Paula didn't come to talk to the society regarding what involves with setting up / maintaining/ hosting a repeater. Geoff has the majority of the old repeater and currently investigating its current condition. At this stage nothing is ruled in or out with regard progress on this potential project.

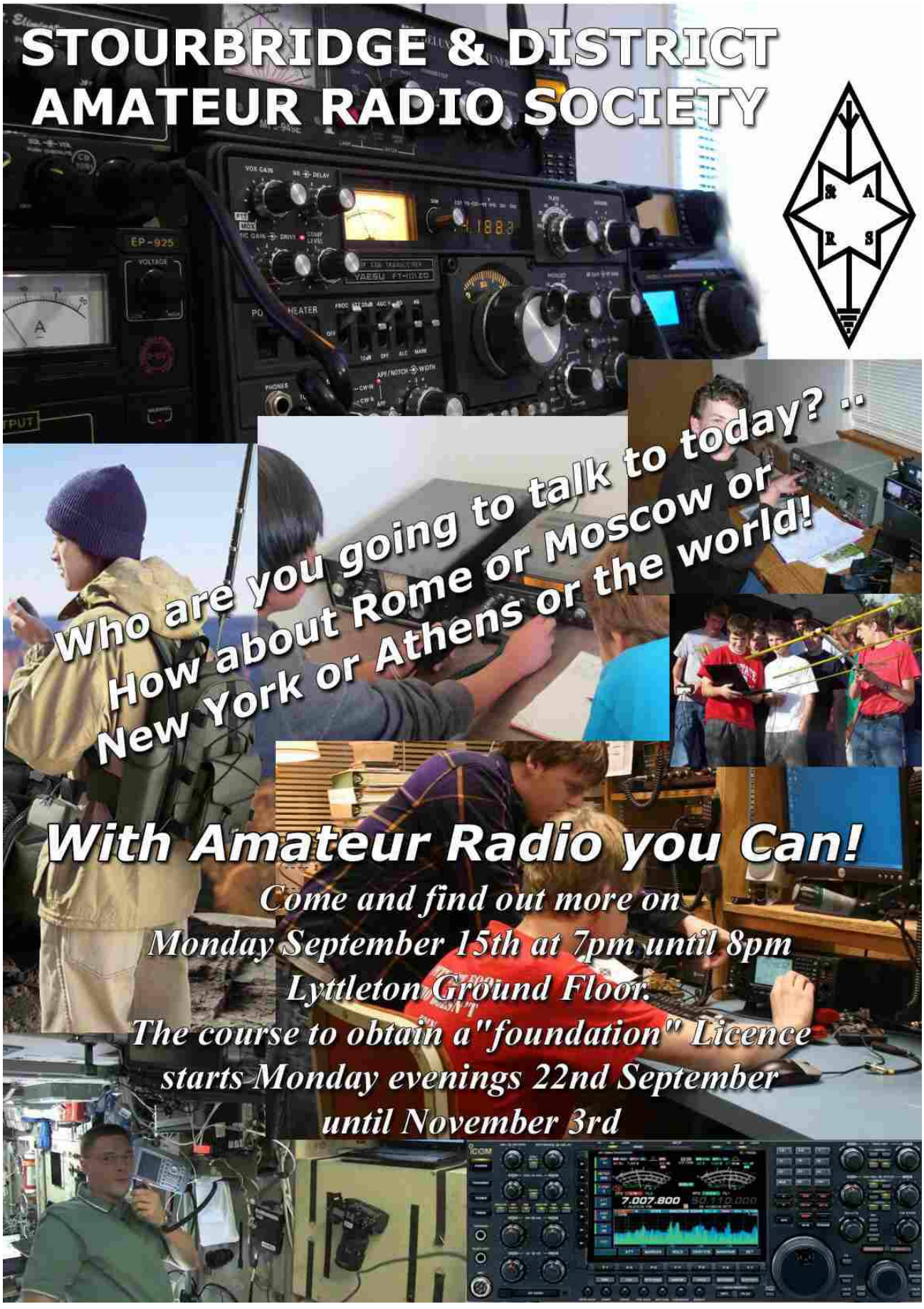
As always we are after talks plus articles for the newsletter

I would also like to thank Geoff for his most enjoyable and "off the cuff" talk on Band I and Band III TV aerials. (Please see his article in this newsletter - Ed.

Thanks

James

STARLITE


STOURBRIDGE & DISTRICT
AMATEUR RADIO SOCIETY
Who are you going to talk to today? ..
How about Rome or Moscow or
New York or Athens or the world!
With Amateur Radio you Can!
Come and find out more on
Monday September 15th at 7pm until 8pm
Lyttleton Ground Floor.
The course to obtain a"foundation" Licence
starts Monday evenings 22nd September
until November 3rd

AERIAL RIGGING BEFORE HEATH & SAFETY

OR DON'T TRY THIS AT HOME.

I first started working at Multi Broadcast at the age of sixteen as an Aerial Rigger's Mate. When Multi Broadcast first started they had a system that allowed the re-broadcast of radio stations and this was achieved by the use of a two wire system which consisted of the main unit installed at the shop in Blackwell Street, Kidderminster. This unit had four radio tuners which were fed into a line amplifier and then distributed around Kidderminster via two wires. It also fed into Stourbridge via the telephone poles and arrived at the old Hagley cattle market where there was a line amplifier which boosted the signal which was then was fed around Stourbridge. This only had four radio stations so not much of a selection, but when Radio Luxembourg became popular, the problem was solved by having Eddystone Radio of Birmingham fit a 680x receiver which was flat tuned so that wherever the pointer was put it still gave Radio Luxembourg.

This two wire system was distributed around Stourbridge from house-to-house and chimney-to-chimney. The company was solely a rental company so if a customer wanted a radio then a tap was taken off these two wires and fed via 300 ohm ribbon feeder to the radio unit . All this unit contained was a coil pack with a wave change switch and two valves; one was used as a rectifier and one as an audio output stage.

Consequently, when wireless radio sets became more affordable, our system became obsolete and it changed the job of the aerial riggers from aerial erection to disconnecting and taking away the old lines. So I was paired up with a chap called mad Eddie and he would put up the ladder at one end of the street, run up the roof, cut the two wire spans then cut the lashing wire then throw down the insulator plus lashing wire and corner plates and remaining fittings. Having done that he would swing round the chimney and run across the roof down the other side, jump the gap between the houses and run up the other side to do the same again. It was my job to collect up the copper wire and the rest of the stuff and load it on to the van. We would take away the old unit and replace it with a normal type radio. Some of the cable and insulators found their way to my house where they were made up into wire aerials slung across the garden to the annoyance of my mother.

Rigging band 1 and band 3 aerials

Frequency of band 1 - 47 to 88 mhz
Frequency of band 2 – 87.5mhz to 108 mhz
Frequency of band 3 - 174 to 240mhz

The shop in Stourbridge was located at the top end of the arcade which was near to the bottom end of the high street. At around nine o'clock we would back the van into the arcade and collect the jobs for the day and load the van. If it was a full installation there would be a TV and aerials to go with it, also aerials for other jobs so BBC 1 and ITV (if it was a good signal area then it would be a 5 element or an 8 element but depending on the area for signal strength it could be anything up to a double 8 on a 15 foot mast). So on loading the van with what was wanted the next important thing to do was go round the corner to the caravan for breakfast: sausage or bacon sandwiches and a mug of tea. (as in these times the TV transmission did not start until ten o'clock). So on to the first job if this was a full installation then the TV was fitted in the house near a window. Next the ladders were erected (triple 12 aluminium) so they were quite light, next the roof ladder was lifted into position (this consisted of a piece of 3 by 2 timber about 16 inches long to which was fastened three pieces of 1.5x1 inches by ten foot and across these was fixed the rungs). Now this arrangement was okay if

the ridge tile was triangular, it hooked over okay but if the roof had fancy ridge tiles then it had to go in the gutter. Another type was the rounded style and this caused problems by the fact that the block of wood on the end was not deep enough so it just held on and as you walked up it, the wood would bend to lie on the roof so the block of wood would work its way off the ridge tile. If the chimney was half way down the roof then you simply hooked the block around the back of the chimney, having done that the next thing was the lashing kit. This consisted of a length of galvanised steel wire 2 J bolts, 2 U bolts and 3 corner plates and 2 thimbles and a bracket. The first step was to fit one thimble to the end of the wire, this was spliced on by bending about 8 inches of wire round the thimble and taking one strand of wire and wrapping it around both pieces of wire. This was done until all the strands were used up (this can be seen on cables that hold up telephone poles). Next the U bolts were fitted and also the J bolts. So with the 3 corner plates in your pocket along with 2 spanners and a pair of pliers and the other thimble plus the bracket you started to climb the ladder from the ladder you scrambled onto the roof ladder (most times it was not long enough usually being short by about 2 feet). Having now got to the chimney if it was a normal type with 4 flues that was okay you then rest the bracket on the chimney and unroll the lashing wire and place it round the chimney then holding onto both ends of the wire in one hand you would hook one bolt into the thimble then hold onto the bracket whilst hooking the other end of the wire around the other bolt. Now holding onto the loose end of the wire you slide the corner plates round the chimney keeping the wire level and on the same line of cement. The two plates closest to you are easy to fit, it is the one diagonally opposite the bracket that is difficult. To fit this most times you hung onto the loose end of the lashing wire while you clambered around to the other side of the chimney (if it was an 8 pot chimney then the only way to get the corner plate in was by climbing across the chimney and down the other side and most times the cement holding on the pots had crumbled and stepping down the other side you could end up holding one). Now the wire around the chimney and the corner plates in place you yanked on the loose end of the wire to take up the slack then cutting off the spare wire you fixed the other thimble the same way as the first then tightening the J bolts to hold the bracket in place.

The next step is to make up the aerial; first is the BBC1 aerial. This consists of an X on a 6 foot mast and a centre insulator. The elements were closed down against the mast so open them out and fasten them in place with bolts and wing nuts .The elements would be about 4 feet in length and two had a length of rope inside to stop the elements from vibrating , the two left-hand and the bottom right hand element were strapped together. In the centre of the insulator is where the co-axial cable is connected so about 6 foot of cable is connected. Then the ITV aerial is made up; this is a Yagi type either a 5 or 8 element, this would be about five foot long for the 5 element or 7 foot long for a 8 element. This had a folded Dipole about 2 foot in length and had about 6 foot of cable connected .This was fixed to the 6 foot mast with a cranked arm. These two pieces of co-axial were connected together with a filter box containing a high pass and low pass filter then a single length of coax was also connected to the filter box. This was about the size of RG58 or low-loss type about the size of satellite cable. The cables were taped to the pole. The whole lot was then carried up the ladders and fitted into the bracket and pointed in the direction of the transmitters. BBC 1 from Sutton Coldfield and ITV from Lichfield were the only two transmitters we could use. (in the direction of Birmingham). The down lead was then taped to the pole and looped over the J bolt and down to the chimney flashing down the roof over the gutter and then it is fastened to the window frame with staples. A hole was drilled through the frame with a brace and bit (no electric drills then). We used the window frames because the only nails you had to fix it to the wall was a nail called a lead headed which was a steel chisel shaped with a lead moulding around the head of the nail with a lead tail. The problem with this was that if hammered into hard cement the top of the nail would fall off and just left the nail in the cement. But in some areas where the signal was very poor then aerials became bigger double 8 element aerials on 10 foot and 15 foot masts on double lashings. This was a bit awkward due to the weight and height so to get it up the roof and into the

bracket was difficult. Also there could be a problem with ghosting, this was the signal reflected from a tall object and arriving at the aerial later than the original signal this gave an inverted picture slightly to the right. Sometimes this was so strong we used that instead of the main signal. Due to the way the signal was transmitted (this was called vestigial sideband). The video was amplitude modulated and peak white was 100% modulation and black was 37% and a pulse called a sync pulse was at 28%. This pulse is on the beginning of every line so the TV picture is locked to the transmitter. This meant you needed to get a good signal or the picture would roll or slip sideways (on bands 4 and 5 the modulation is reversed so the sync pulse is now at 100% and peak white at 32%) so now if the signal is poor the picture is locked and can still be watched. As we only had two transmitters unlike now where band four covers 471 MHZ to 607MHZ channel 21 to channel 38 and band five covers 615MHZ to 847MHZ channel 39 to channel 68 . Also as well as the main transmitters covering this area there are also 5 repeaters .The aerials for the main transmitters are horizontal polarised and the repeaters are verticaly polarised.

Sutton Coldfield runs 1000KW		Height 403 meters above ordnance				
datum Channel			46	40	43	50
The Wrekin	runs 100KW	448	26	33	23	29

Repeaters

Brierley Hill	runs 10KW	180	57	63	60	53
Bromsgrove	runs 2.8KW	198	31	27	24	21
Bridgnorth	runs 16Watts	95	62	68	56	66
Kidderminster	runs ? KW	133	58	64	61	54
Kinver	runs 14Watts	88	66	48	56	68
Redditch	runs 1.6watts	127	22	28	25	32

Channel five Channel 35 on Wrekin and channel 37 on Sutton Coldfield
This caused problems as VHS video recorders used channel 36

625 Line Transmissions

BBC 2 Transmissions began on 20 April 1964 so now only one small sized aerial was needed and as BBC l and ITV l began transmitting life was so much easier requiring one aerial for four/five channels and one down lead.

July 1st 1967 saw the first colour transmission

Once transmission for 625 line was started the 405 line from Litchfield was switched off in 1985, it was returned to service for channel 5 in 1997 also both FM and DAB also briefly went into Freeview and H.D for Birmingham area.
After the digital switch-over Sutton Coldfield now transmits Birmingham
B R M B on 94 .8

June 8 1998 provided transmission for IRL Touch radio that covers S. E. Staffordshire and Derbyshire also in May 2000 provides DAB services for central and east Birmingham.

405 LINE

Lichfield ran 400K Watts with a height of 305.2 metres and came into service 17 Feb 1954-6

The above article is courtesy of Geoff G0KVK, for those who did not see the original presentation at StARS on Monday July 21 2014.

WHAT FUTURE FOR DAB IN THE UK?

Background

In September 2010 I wrote an article on broadcast digital radio in its various forms. The article touched briefly on digital radio from Internet Radio, Freeview, Satellite and DAB – Digital Audio Broadcasting. At the time it was anticipated in the Carter Report that AM/FM broadcasting would be switched off in 2015 to be replaced by DAB. As we approach 2015, I thought it would be interesting to take a look at DAB again.

Back in 2010, the phasing out of AM/FM broadcasting was set for 2015. Today in 2014 the date for change-over is now set at 2020. Who listens to what radio stations and when and by what means is a a slippery subject that seems to defy those who make generalisations. What is true for one part of the UK is not true for other parts of the UK. Ofcom have the objective of making best use of the radio spectrum and this means weaning the public from FM broadcasting to DAB. For the public to be convinced that DAB is the "way to go" a critical mass of the listening public needs to be persuaded of the benefits. This does not seem to be happening with any certainty. Let us examine why.

Benefits For and Against

Greater Choice

On of the main benefits of DAB is that better use of the radio spectrum would enable greater choice

of radio stations and choice of programs. The proposition seems to be that you can have DAB but it will mean the loss of the current FM and AM frequencies. According to an Ofcom survey when asked “are you satisfied with choice of radio stations in your area”, 91% said they were satisfied. So is there an appetite amongst the public for a larger choice? As with television, greater choice does not equate to higher quality of programs.

According to Ofcom residential broadband speeds have trebled in the last three years. If choice is really important then internet radio can provide almost infinite variety and often much better audio quality than DAB. The combination of cheaper faster broadband, the common availability of WiFi in the home and internet radio has the capability of making internet radio sets a viable long term alternative.

DAB radio is transmitted in multiplex groups or ensembles. Each multiplex group is limited in size and there is a trade-off between the number of simultaneous broadcasts and audio quality. Put another way, one can increase the number of radio stations up to a point, but eventually audio quality will have to be reduced if one exceeds this point.

DAB Radio Prices

When DAB was first available receiver prices were high compared with an equivalent AM/FM radio. Today a DAB radio can be purchased at around twenty pounds, however most makes can additionally receive FM transmissions. The recession did not help the cause of DAB. Aside from physical damage the average tranny is almost indestructible, although damage from battery corrosion can be a limiting factor. Replacing an existing AM/FM radio with a DAB radio does not have the same urgency as it does replacing an analog TV with a digital TV. In marketing terms a radio product life-cycle is much longer than a television or a car for example

Take-up of DAB is growing

Yes it is, but the rate of growth is quite low and has decreased in recent years. AM/FM radio sales are roughly double DAB radio sales. What would create a tipping point would be for DAB radio to be the purchase of choice.

Battery Usage

The expected battery life of a DAB radio is not something that the salesman is in any rush to tell you about. When you buy your DAB radio and install its batteries, this will probably be the last time you run the radio on battery power only. Typical D cell life is around 24/48 hours. As such you are unlikely to use your DAB radio unless it is plugged into the mains. A DBA radio is not a portable radio like the average tranny and will probably end in the kitchen or the bedroom. Out of curiosity I did a test of the radio pictured at the start of this article. My tests show that the DAB radio has a current usage of 350 mA at 9 Volts receiving a DAB broadcast. The current consumption receiving an FM broadcast is the same, so you can not save batteries using your DAB radio in FM mode.

In contrast a similar test on a different regular FM only radio gives a current consumption of 100mA. So comparing power consumption -

DAB power usage is 9 Volts x .350 Amps = 3.15 Watts
FM power usage is 9 Volts x .100 Amps = 0.9 Watts

In **my** tests the DAB radio uses 3.5 times as much power an equivalent FM radio

Sound Quality

Given a good signal, DAB does not sound any better than FM and is generally worse. As stated in the background section above, it is often inaccurate making generalisations about radio. The audio quality of programs is changed dynamically and can be changed from stereo to mono. When for example evening only broadcasts start, the audio quality of existing broadcasts will reduce if the multiplex group is full. If you are listening to BBC Radio 3 sound quality is probably fine, other more marginal commercial stations could see a reduction in sound quality compared to its FM equivalent. If you tune your FM set in and walk away from the radio set only to have the signal fade, you will not experience similar problems tuning DAB radio stations. Like Freeserve TV, if your signal is better than adequate your reception should not be variable.

DAB and DAB+

DAB+ was introduced to address some of the shortcomings of DAB. DAB+ is capable of delivering roughly three times as many radio stations as an equivalent DAB station. It does this by employing more efficient compression methods and has better error correction facilities and can achieve this result with lower sampling rates. DAB radios can't receive DAB+ broadcasts, but DAB+ radios should be able to receive DAB signals. In some cases this may require a firmware upgrade to the radio. From an international perspective DAB+ adoption is greater outside the UK. Presently it does not seem that the UK will pursue the adoption of DAB+ and some advocate that you should not delay any buying decisions in the hope that DAB+ broadcasts are a likely future development. Note that it is possible to mix DAB and DAB+ in the same multiplex group.

Technology has not stood still however and DAB+ is showing its age. TV and satellite digital radio broadcasts use newer signal encoding using DVB-T2 which is capable of a 3.5 fold improvement over DAB+.

Car Radios

Manufacturers have been slow to fit DAB radios to new cars. As of 2013 sixty percent of cars do not have a DAB radio fitted as standard. Prices for aftermarket DAB radios start at around £120. When not fitted as standard, prices for original equipment manufacturer fitted radio prices are in the region of £250, although this will vary depending what other functionality is incorporated in the radio such as CD player, MP3 player, Satnav, reversing camera etc. Some car radios are capable of falling back to FM when the DAB signal is not adequate. Twenty percent of all radio listening takes place in cars, so this is a significant problem. There is a solution for all the uses who get stuck with an FM radio that no longer has any stations to tune into. This would be like the TV equivalent of the set top box, but would require a stick-on aerial and device powered from the cigarette lighter socket. This would probably need to be removed from the car overnight or risk theft of the item. I could go on, but the option looks unattractive.

Conclusions

The move from analog TV to digital TV was assisted by innovations in newer TV receivers. In particular LCD screens and HDMI and the demand for larger TV screens incentivised viewers to upgrade. Major sporting events such as the World Cup were a similar factor. Radio in comparison to television has not experienced similar stimulus to upgrade and the benefits were less clear to the public. Fast take-up of DAB would have helped to improve the chances for success. Slow take of DAB is a disincentive for commercial DAB radio. Small audiences and slow take-up of DAB means

that advertisements reach fewer users and make the medium less attractive and the future less certain. By and large UK radio audiences seem satisfied with FM and the move from FM has not ben as straightforward as one would have expected.

As of 2014 we look set to get DAB which has been superseded by DAB+ which in turn has been superseded by DVB-T2. The move to DAB does not seem to be customer led. The industry seems to be taking away a satisfactory product giving its customers an inferior and outdated product in its place.

Further Reading

http://radiotoday.co.uk/2013/09/report-not-much-interest-in-buying-dab/
http://www.parliament.uk/documents/documents/upload/stevegreen.pdf
http://www.techradar.com/news/car-tech/why-dab-radio-in-the-uk-is-broken-and-how-to-fix-it-1217586
http://en.m.wikipedia.org/wiki/Digital_Audio_Broadcasting
http://www.theguardian.com/media/2013/dec/16/digital-radio-switchover-2020-ed-vaizey

As usual any errors are mine.

Adrian (G0NLA) Starlite Editor

ROVING REPORTER

Due to time pressures, there will be no 'Roving Reporter' this month.

ITEMS FOR SALE

Richard Newton advises that one of their members, Phil G0HLM, has some equipment for sale. If anyone is interested, please contact Phil direct on 07780 540319.

ICOM 7400 £600
YAESU FTM 350
ICOM 7000 £600
2MT JABEAM £10
AND SOME OTHER BITS AND PIECES

Looks tempting!!

STARLITE

YOUR COMMITTEE

Hon. President	JAMES	G7HEZ	
Vice President	NICK	G6DQN	
Hon. Secretary	JOHN	M1EJG	(01562) 700513
Hon. Treasurer	JOHN	G8UAE	
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	KEITH	M0HPY	
	SEAN	M3XMJ	
	PETER	M6ZXH	
	MALCOLM(Co-opted)	G8BOP	
	ADRIAN	G0NLA	

CALENDAR OF EVENTS

It should be noted that the Shack will be open every Monday evening unless shown otherwise in the Calendar

August	Mon 4th	Open Shack Night - Or on air natter
	Mon 11th	Open Shack Night - Or on air natter
	Mon 18th	No Main Meeting (Shack Open as Usual)
	Mon 25th	No Meeting – Bank Holiday
September	Mon 7th	Open Shack Night – Or on air natter
	Mon 15th	Military Radio – Stuart McKinnon (Subject to Confirmation)
	Mon 22nd	Start of Foundation Course
October	Mon 27th	Main Meeting TBC
November	Mon 3rd	Foundation Course Exam
	Mon 17th	Surplus Sale
December	Mon 4th	Christmas Gathering
January	Mon 19th	Main Meeting TBC
February	Mon 16th	Constructors Competition and Quiz
March	Mon 16th	2015 AGM
April 2015	Mon 20th	Vintage Radios (Phil G4SPZ)